



Distributed Micro Data

Distributed Micro Data Centre Solution

iLamp isn't just a smart streetlight—it's a powerful, self-sufficient on or off grid infrastructure with the potential to host a scalable network of distributed micro data centres (DMDCs). Leveraging its autonomous power generation, tamper-resistant casing, and modular design, iLamp creates a secure, resilient solution for local data processing, storage, and advanced edge computing needs in urban and remote environments alike. This ensures both infrastructure efficiency and adaptability, empowering cities, counties, and even countries with reliable, "always on" connectivity and data processing capabilities.

iLamp's on/off-grid capabilities and adaptable DMDCs position it for diverse applications, including telecommunications, public safety, energy, telemedicine, agriculture, and disaster response. By hosting data at the edge, iLamp minimises latency, supports regional data sovereignty, and ensures rapid access to essential information in emergencies. For rural areas, iLamp streamlines rural connectivity, enables precision agriculture and environmental monitoring, while in urban areas, it powers smart grids, telecommunications, and local resources.

iLamp's unique design as a sustainable, energy-efficient, modular lighting and utility system directly supports DMDCs, placing advanced technology

and data storage precisely where it's needed.

Resilience and Reliability

Networked Redundancy: With micro data centres distributed across regions, iLamp ensures data redundancy and uptime. If one iLamp unit experiences downtime, others in the network seamlessly maintain data continuity. This "always on" network is crucial for essential services like healthcare, emergency response, and finance.

Local Disaster Recovery: By hosting DMDCs in diverse locations, iLamp provides rapid data recovery options, maintaining business continuity during natural disasters, cyberattacks, or power outages. Each unit strengthens resilience.

Self Powered and Energy Efficiency

Autonomous Energy Generation: Each iLamp generates renewable energy via integrated solar panels and is optionally installed off grid, or with the grid as a backup, reducing grid reliance and lowering operational costs. This sustainable, low carbon power source is ideal for energy efficient data centre solutions, especially in underserved or remote areas.

Reduced Operational Independence: iLamp's self sustaining energy model minimises environmental impact, leading to a carbon neutral infrastructure capable of operating autonomously, independent of the local grid, making it a perfect solution for low infrastructure regions.



Enhanced Security

Secure and Tamper Resistant: Each iLamp unit is encased in a robust, tamper resistant enclosure, protecting against theft, vandalism, and environmental threats. These secure cases also safeguard sensitive data from physical access, enhancing data protection across the network.

Reduced Breach Risk: The distributed nature of iLamp's DMDCs minimises the risk of large scale data breaches, making the network more secure and compliant with global data security standards.

Scalability and Flexibility

Modular Expansion: iLamp units can be added or expanded geographically based on local demand, making them ideal for urban growth or scalable applications. As needs grow, additional iLamp DMDCs can be deployed without significant infrastructure changes, enabling localised data processing and reducing latency.

Edge Computing for IoT and Smart Cities: iLamp DMDCs process IoT device data locally, enabling rapid response times for applications like traffic management, environmental monitoring, and smart grids. Real time data analytics also support surveillance and autonomous systems, enhancing urban safety and infrastructure management.

Optimised Connectivity and Reduced Latency

Proximity Data Processing: By positioning DMDCs near end users, iLamp reduces data transfer times, optimising connectivity for low latency applications like streaming, gaming, and real time analytics. This is particularly valuable in remote areas or high density urban centres, where reliable access is essential.

Local Content Caching: iLamp DMDCs act as local content nodes, hosting popular content and reducing bandwidth usage for faster, more efficient access. This proximity provides high quality, low latency service for multimedia, gaming, and cloud based applications.

Data Sovereignty

Regional Data Storage: iLamp's localised data hosting supports compliance with data sovereignty regulations, like GDPR in Europe or HIPAA in the U.S. Each unit can store data within specific jurisdictions, allowing companies to operate in heavily regulated markets while ensuring data privacy and security.

Healthcare Data Processing: By hosting data centres at the edge, iLamp

facilitates fast, secure processing of sensitive health data, supporting telemedicine, diagnostics, and emergency response, all while adhering to local data security and privacy laws.

Reduced Capital Investment and Operational Costs

Cost Effective Micro Data Centres: Rather than investing in a single, large data centre, iLamp offers a modular alternative that spreads capital investment over smaller, scalable units. This decentralised approach lowers initial and maintenance costs while providing operators with the flexibility to manage each data centre independently or as a unified network.

Lowered Transmission Costs: Since iLamp DMDCs are self powered and networked close to end users, they cut down on long distance data transmission expenses, enabling localised, cost efficient infrastructure for smart city initiatives.

Eco Friendly and Low Impact

Minimal Ecological Footprint: Each self powered iLamp unit reduces the environmental impact of data centre operations, seamlessly integrating into both urban and rural landscapes without disrupting local ecosystems. This approach aligns with sustainable development goals and fosters resilient, eco friendly cities.

Support for National Defense and Emergency Operations: Deployable and self sufficient, iLamp DMDCs can provide essential communication, intelligence gathering, and data storage for military and disaster relief operations. This capability ensures secure, localised data access in emergency situations or mobile deployments.

Community and Economic Development

Job Creation and Local Manufacturing: iLamp deployment supports local economies by creating jobs in manufacturing, tech support, and maintenance. Each installation not only improves infrastructure but also fosters economic growth and community ownership, directly benefiting local economies.

Retail and E Commerce Support: For retailers, iLamp DMDCs enable real time data analytics for inventory management, customer behaviour insights, and location specific marketing strategies, enhancing the in store experience and reducing dependency on distant servers.

Scalable Power and Regional Microgrid Capabilities

On Demand Microgrid Scaling: iLamp's distributed units create a sustainable

microgrid, allowing regions to scale up from individual units to a robust, interconnected grid supporting larger residential, commercial, and industrial zones. This scalability provides long term adaptability to changing energy and data demands.

Reduced Dependence on Fossil Fuels: By integrating renewable sources and balancing energy generation with storage, iLamp microgrids lower reliance on fossil fuels, cutting costs and enhancing energy security for communities and businesses.

Applications of iLamp DMDCs in Smart Cities

Telecommunications and 5G Support: Located near telecom towers, iLamp DMDCs handle increased data demands from 5G networks, delivering faster speeds for mobile data and remote applications like VR and gaming with minimal latency.

Public Safety and Surveillance: iLamp DMDCs provide real time monitoring for public safety systems, enabling rapid response and improved emergency coordination for city infrastructure and public areas.

Education and Research: Campuses benefit from iLamp's localised data centres, supporting high demand research and academic applications while offering network resources for educational needs.

Energy and Utilities: iLamp supports smart grid management by balancing loads, integrating renewable energy, and enabling predictive maintenance for utility providers.

Agriculture and Environmental Monitoring: In rural areas, iLamp DMDCs enable precision agriculture applications like soil and water monitoring and wildlife tracking, supporting eco conscious and data driven farming practices.

The iLamp DMDCs represent an energy efficient, resilient infrastructure solution that brings data processing and connectivity closer to communities, transforming local landscapes with reliable, eco friendly technology.